REMARKS

A telephonic interview was conducted on April 19, 2005 with the Examiner and an associate attorney of record, Peter Paik. Applicant explained in detail why Chouly (USPN 6,574,775) does not teach the invention of the subject application as reflected in amended claim 1.

As explained during the telephone interview, one of the key distinguishing features of the Applicant's invention resides in the reference block formation which is not taught in Chouly. Simply put, as recited in claim 1, each of the blocks in a group are encoded not only to reduce error rate, but also to accommodate the reference block itself. Ultimately, the reference block is transmitted indirectly after being encoded in each of the blocks, hence improving the code rate. The transmitted reference block is reconstructed in a decoding step.

Furthermore, as explained by Applicant, Chouly carries out completely different processes. Unlike the subject invention, it goes through multiple iterations of soft decision steps, followed by a hard decision step to minimize errors.

Rejection Under 35 U.S.C. 102(e)

The rejection of claims 1-14 under 35 U.S.C. 102(e) as being anticipated by Chouly (USPN 6,574,775) is respectfully traversed.

The present invention is directed to a block encoding and decoding method and apparatus using a coding group which has a plurality of code words as a coding unit to increase a code rate. While the original coding group has n+1 original codeword of m-bit message, "m" being a positive integer and "n" being an odd integer greater than "m", a first original block of m-bit message is encoded as a first reference block of n-bit codeword which is A or B type. Each of the rest n original codeword of m-bit are encoded as n weighted blocks of n-bit codeword and decided as either A or B type block based on a bit sequence of the reference block. Further, the reference block is not transmitted to the storage medium or an external device and n bits of the reference block are erased in a block coding system. A bit number "a" of bit "1" in an A type weighted block of n bits satisfies a relation $2^m <$ $_nC_a$, "a" being a positive integer, and the bit number of "1" in a B type weighted block of n bits is given by "n-a".

In contrast, Chouly is related to the method for iteratively decoding a binary block code defined by a parity check matrix H to error check. Chouly merely discloses the decoding of the source bits to implement the error correcting method in the communication system.

The code word $[b_0, ..., b_{N-1}]$, which is kindly indicated by the Examiner as a reference block does not indicate or designate the type of the encoding method of the rest of the blocks in the block group because the code word $[b_0, ..., b_{N-1}]$ itself

is a processing decoding unit in the Chouly and the code word $[b_0, ..., b_{N-1}]$ is transmitted to the receiver through the channel. Therefore, Chouly fails to disclose or even imply that the reference block is generated to indicate the type of the rest of the blocks in the block group.

Furthermore, a coding group which has a plurality of codeword is processed as a coding unit of the present invention while a codeword in the Chouly is processed as a coding unit. Therefore, a coding unit which is processed is different each other.

Accordingly, as per the Examiner's suggestion, the claims have been amended to reflect the Examiner's proposal during the telephone interview pursuant to which claims 1, 8 and 15 have been amended to incorporate the limitation of claims 7, 14 and 22 to clearly distinguish the subject invention from Chouly.

Accordingly, the rejection of claims 1-6, 8 and 9-13 under 35 U.S.C. 102(e) as being anticipated by Chouly should now be withdrawn. Claims 7, 14 and 22 have been cancelled.

Rejection Under 35 U.S.C. 103(a)

The rejection of claims 15-22 under 35 U.S.C. 103(a) as being unpatentable over Chouly (USPN 6,574,775) is respectfully traversed.

As explained above, the present invention is directed to encode a first block of the original block group into the reference block and the rest of the blocks in the block group into the weighted code blocks which are encoded based on the bit sequence of the reference block. Therefore, it is important to distinguish and recognize the first block of the block group of the source bits to indicate the type of the encoding for the rest of the source data in the block group.

Regarding claim 15, in the present invention, a buffering device outputs a digitalized image signal on a basis of an original block of m-bit message and generates a timing signal for notifying when the original block is outputted and, a first control part determines whether the original block is a first original block of m-bit message when the timing signal is first generated from the first buffer. Further, there is provided a buffer, in the decoding apparatus, having a reference buffer for storing a sequence of reference bits, wherein each reference bit implies whether the weighted block is an A type weighted block or a B type weighted block, and n buffers for storing bits of the weighted block provided from the storage medium; a second control part for determining whether the weighted block is an A type weighted block or a B type weighted block; and decoding part for decoding the weighted block to generate a corresponding original block of m-bit message and reconstructing the first original block from the sequence of the reference bits. In this way, the reference bits can be reconstructed from the weighted code block, thereby saving the number of bits to be transmitted through the channel, resulting in the increase of the code rate.

In contrast, Chouly discloses only the division of the received data into two categories for decoding thereof and totally silent on the encoding the source data based on the reference bits which are not actually transmitted through the channel. It is the decoded data of the received data itself what is reconstructed in Chouly, not the reference bits as in the case of the present invention. Therefore, the effect of the code rate reduction cannot be achieved while maintaining the desired bit error rate.

Regarding claims 16 and 17 which depend from claim 15, the first control part has a counting unit for counting the number of the timing signal provided from the first buffer and, the counting unit is reset on receiving an $(n+1)^{th}$ timing signal generated from the first buffer. In contrast, Chouly fails to disclose a counting unit for counting the number of the timing signal provided from the first buffer, which is because the there is no reference block utilized for encoding the source data and, accordingly, the reference block is not reconstructed at the decoder.

Regarding claims 18 and 20 which also depend from claim 15, the reference block of n-bit codeword is an A type weighted block, wherein a bit of "1" in the reference block corresponds to an A type weighted block and a bit of "0" in the reference block corresponds to a B type weighted block. In contrast, Chouly only discloses the separation of the received data into two categories and is totally silent on the type of the reference block itself.

In claim 21 which also depends from claim 15, each sequence of the reference bits is obtained from each reference block at the decoder and, being identical to the bit sequence of the reference block of the original block group. However, Chouly fails to disclose even imply that the reference block is constructed at the encoder and reconstructed at the decoder to be the sequence of the reference bits, therefore, it is not even possible to say whether the bits of the reference block and the sequence of the reference bits are identical or not.

Claim 22 has been cancelled.

Therefore, it is respectively submitted that Chouly is conceptionally and materially different from the present invention and that none of the features defined in the pending claims 15-21 are disclosed, taught or even implied in Chouly. This also applies to claims 1-6 and 8-13, respectively.

Accordingly, it is respectfully submitted that claims 15-21 define an unobvious and patentable invention over and above the prior art reference, Chouly.

C O N C L U S I O N

Applicant believes that this is a full and complete response to the

Office Action. For the reasons discussed above, applicants now respectfully submit

that all of the pending claims are in complete condition for allowance. Accordingly, it

is respectfully requested that the Examiner's rejections be withdrawn; and that

claims 1-6, 8-13 and 15-21 be allowed in their present form.

Reconsideration and allowance of claims 1-6, 8-13 and 15-21 is

respectfully solicited.

Respectfully submitted
Associate Attorney for Applicants,

Dated: July 25, 2005   By:
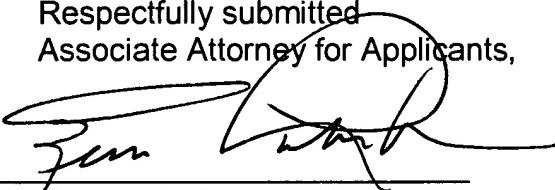
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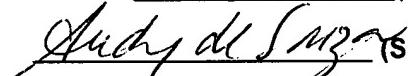
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